

## AMENDMENTS

### In the Specification:

Please replace paragraph [0030] with the following amended paragraph:

[0030] The LED lamp of the present embodiment is capable of preventing outgoing rays of light from an LED chip from concentrating upon the plane going through the light emitting surface, by which generation of ~~an~~ an irregular light emitting peak at the front is prevented. This enables prevention of uneven display to thereby increase the display quality.

Please replace paragraph [0053] with the following amended paragraph:

[0053] ~~Hereinbelow,~~ Below, a detailed description will be given of the an embodiment of the present invention with reference to the drawings. Note that while the same reference numerals may be used across different drawings, the parts referred to by the same numerals in different drawings are the same parts as described below in the detailed description.

Please replace paragraph [0073] with the following amended paragraph:

[0073] The LED lamp, during operation, uses the direction perpendicular to a light emitting surface 42B of the LED chip 42 as a frontward direction and the direction parallel to the light emitting surface 42B as a vertical, or upward/downward direction. The convex lens ~~41~~ 44 is composed of an upper portion 51 and a lower portion 52 in the above-stated upward/downward direction, and the upper portion 51 and the lower portion 52 abut on each other in an interface plane S11. The interface plane S11 is a plane that is orthogonal to an extension of the light emitting surface 42B of the LED chip 42 and does not intersect with the LED chip 42.

Please replace paragraph [0075] with the following amended paragraph:

[0075] The upper curved surface 51A of the upper portion 51 is a curved surface that refracts outgoing rays of light from the LED chip 42 more ~~greatly~~ than the lower curved surface 52A of the lower portion 52 does.

Please replace paragraph [0076] with the following amended paragraph:

[0076] Accordingly, given ~~that an~~ a first angle calculated by extracting an incident angle  $\theta_{i1}$  at which a ray of emitted light from the LED chip 42 impinges upon the upper curved surface 51A from an outgoing angle  $\theta_{o1}$  at which an emitted ray of light exits from the upper curved surface 51A is expressed as  $\theta_{o1} - \theta_{i1} = \Delta\theta_1$ , and ~~that~~ given an a second angle calculated by extracting an incident angle  $\theta_{i2}$  at which a ray of emitted light from the LED chip 42 impinges upon the lower curved surface 52A from an outgoing angle  $\theta_{o2}$  at which an emitted ray of ~~right light~~ light exits from the lower curved surface 52A is expressed as  $\theta_{o2} - \theta_{i2} = \Delta\theta_2$ , then  $\Delta\theta_1$  the first angle is larger than  $\Delta\theta_2$  the second angle.

Please replace paragraph [0092] with the following amended paragraph:

[0092] The LED chip 82 is embedded in a resin convex lens 84. The convex lens 84 is convex toward the light emitting direction of the LED chip 82. The LED lamp, during operation, uses the direction perpendicular to a light emitting surface 82A of the LED chip 82 as a frontward direction and the direction parallel to the light emitting surface as an upward/downward direction. As shown in the sectional view of Fig. 9, the convex lens 84 is composed of an upper portion 91 and a lower portion 92 in the above-stated upward/downward direction, and the upper portion 91 and the lower portion 92 abut on each other in an interface plane S51. The interface plane S51 is a plane that is orthogonal to an extension of the light emitting surface ~~82B~~ 82A of

the LED chip 82 and does not intersect with the LED chip 82. The interface plane S51 is upwardly away from a central axis S52 of the LED chip 82 by a distance D5 and is upwardly away from the LED chip 82. Also, an upper curved surface 91A of the upper portion 91 of the convex lens 84 is shaped such that the upper curved surface 91A refracts outgoing rays of light from the LED chip 82 more strongly than a lower curved surface 92A of the lower portion 92 does. According to the seventh embodiment, therefore, as with the first to sixth embodiments, it becomes possible to prevent the misrecognition that an actually unlit LED chip 82 is lit, due to incident rays of light from the outside such as afternoon light. Also, the interface plane S51 between the upper portion 91 and the lower portion 92 of the convex lens 84 is located higher than the central axis S52 by the distance D5, and is located above the LED chip 82. According to the seventh embodiment, therefore, it becomes possible to prevent outgoing rays of light from the LED chip 82 from being concentrated upon the interface plane S51 so as to prevent generation of an irregular light emitting peak at the front.

Please replace paragraph [0102] with the following amended paragraph:

[0102] As shown in Fig. 13, the upper curved surface 135A of the upper portion 135 is shaped such that the upper curved surface 135A refracts outgoing rays of light from the LED chip 132 more greatly than the lower curved surface 136A positioned axisymmetrically to the surface 135A about the exit optical axis J131 does. More specifically, the upper curved surface 135A of the upper portion 135 is in the shape of a curved surface where an incident angle of outgoing rays of light from the LED chip 132 is larger than that at the lower curved surface 136A positioned axisymmetrically about the exit optical axis ~~J132~~ J131.

Please replace paragraph [0113] with the following amended paragraph:

[0113] In the above formula (f1), a point (x1, z1) in the x-z coordinate plane having an origin P0 at an intersecting point between the optical axis J131 and the light emitting surface 132B of the LED chip 132 is set as an origin P1. Here, a point P1 (0, 0) is defined as the origin P1 (x1, z1). In the formula (f1), x denotes an x-coordinate (in mm) from the origin P1 (x1, z1), and z denotes a z-coordinate (in mm) from the origin (x1, z1).

Please replace paragraph [0119] with the following amended paragraph:

[0119] In the above formula (f3), a point (x3, z3) in the x-z coordinate plane having the origin P0 is set as an origin P3. Here, a point P3 (0, 5.32) is defined as the origin ~~P2~~ P3 (x3, z3). In the formula (f3), x denotes an x-coordinate (in mm) from the origin P3 (x3, z3), and z denotes a z-coordinate (in mm) from the origin P3 (x3, z3).

Please replace paragraph [0144] with the following amended paragraph:

[0144] In the eleventh embodiment, light reflectance of the mounting surface 162A of the lead frame 162 is set to 80% or less, and light reflectance of the surfaces 163A, 161A of the electrode leads 163, 161 is set to 80% or less, which makes it possible to restrain outside rays of light having entered the convex lens 144 from reflecting on the mounting surface 162A and the surfaces 163A, 161A. Accordingly, it becomes possible to restrain outside rays of light incident upon the convex lens 144 from exiting from the convex lens ~~44~~ 144, and to ensure prevention of misrecognition of an unlit diode lamp as being lit. As described above, in the eleventh embodiment, black surface treatment is applied to set reflectance of the mounting surface 162A of the lead frame 162 and the surfaces 163A, 161A of the electrode leads 163, 161 to be 80% or less. This is because reflectance over 80% does not provide a sufficient reflection inhibition effect.

Please replace paragraph [0146] with the following amended paragraph:

[0146] Next, Fig. 17 shows an LED lamp in a twelfth embodiment of the present invention. The twelfth embodiment is different from the above-described eleventh embodiment only in the point that in a position retreated by a specified distance from the surfaces 162A, 163A and 161A of the lead frame 162 and of the electrode leads 163, 161 in the eleventh embodiment of Fig. 16 in a direction opposite from the light emitting direction, there is provided a black-color resin piece 171 that extends from the inside of the convex lens 144 beyond its bottom surface ~~24C~~ 144C to the outside.

Please replace paragraph [0147] with the following amended paragraph:

[0147] A neck portion 162B of the lead frame 162, a bending portion 163B of the electrode lead 163, and a bending portion 161B of the electrode lead 161 are embedded in the black-color resin piece 171 such that those portions are surrounded by the black-color resin piece 171. The black-color resin piece ~~74~~ 171 as a whole has an approximately cubic shape.

Please replace paragraph [0152] with the following amended paragraph:

[0152] As shown in the sectional view of Fig. 19, in the thirteenth embodiment, the convex lens 184 is composed of an upper portion 195 and a lower portion 196 relative to the above-stated upward/downward direction, and the upper portion 195 and the lower portion 196 abut on each other in an interface plane S191. The interface plane S191 is a plane that is orthogonal to an extended surface of the light emitting surface ~~182B~~ 182A of the LED chip 182 and does not intersect with the LED chip 182.